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IS 9175-34 (1986): Rationalized Steels for Automobile and Ancillary Industry, Mechanical and Physical Properties - Part 34 14CrNi6 Grade steel [MTD 16: Alloy Steels and Forgings]



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IS : 9175 (Part 34) - 1986

Indian Standard

RATIONALIZED STEELS FOR
THE AUTOMOBILE AND ANCILLARY INDUSTRY

PART 34 MECHANICAL AND PHYSICAL PROPERTIES OF
14CrNi6 GRADE STEEL

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

*Indian Standard***RATIONALIZED STEELS FOR
THE AUTOMOBILE AND ANCILLARY INDUSTRY****PART 34 MECHANICAL AND PHYSICAL PROPERTIES OF
14CrNi6 GRADE STEEL**

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Indian Standard

RATIONALIZED STEELS FOR THE AUTOMOBILE AND ANCILLARY INDUSTRY

PART 34 MECHANICAL AND PHYSICAL PROPERTIES OF 14CrNi6 GRADE STEEL

0. FOREWORD

0.1 This Indian Standard (Part 34) was adopted by the Indian Standards Institution on 27 March 1986, after the draft finalized by the Co-ordinating Committee on Materials for Automobiles had been approved by the Structural and Metals Division Council.

0.2 Part 1* of this standard was published in 1979 which covers the chemical composition of 33 rationalized steels. The mechanical properties, hardenability and isothermal transformation characteristics of these 33 rationalized steels are being covered in different parts of this standard (Parts 2 to 34). The data concerning to these properties given in this standard is only for guidance and information purposes.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard (Part 34) covers the chemical composition, mechanical properties and hardenability of 14CrNi6 Grade steel for use by automobile and ancillary industry.

*Rationalized steels for the automobile and ancillary industry:

Part 1 Chemical composition.

†Rules for rounding off numerical values (revised).

2. CHEMICAL COMPOSITION

2.1 The chemical composition of this grade of steel shall be as given below:

<i>Constituent, Percent</i>						
C	Si	Mn	Ni	Cr	S	P
0.12-0.17	0.15-0.35	0.40-0.60	1.40-1.70	1.40-1.70	0.035 <i>Max</i>	0.035 <i>Max</i>

3. HARDNESS

3.1 The maximum hardness for this grade of steel delivered in the annealed condition when determined in accordance with IS : 1500-1983* shall be 217 HBS.

4. MECHANICAL PROPERTIES

4.1 The mechanical properties of this grade of steel in the blank carburized and hardened condition when determined in accordance with IS : 1598-1977† and IS : 1608-1972‡ shall be as given in Table 1.

TABLE 1 MECHANICAL PROPERTIES ON BLANK HARDENED CONDITION

LIMITING RULING SECTION mm	TENSILE STRENGTH MPa	YIELD STRESS <i>Min</i> MPa	ELONGATION GL 5.65 \sqrt{A} <i>Min</i> PERCENT	IZOD IMPACT VALUE, <i>Min</i> , JOULES
30	900-1 200	650	9	40

5. HOT WORKING AND HEAT-TREATMENT TEMPERATURES

5.1 The recommended hot working and heat-treatment temperatures shall be as given below:

Forging/rolling temperature	1 200°C
Process annealing temperature	650-700°C
Carburizing temperature	900-950°C
Hardening temperature	840-870°C
Tempering temperature	220°C, <i>Max</i>

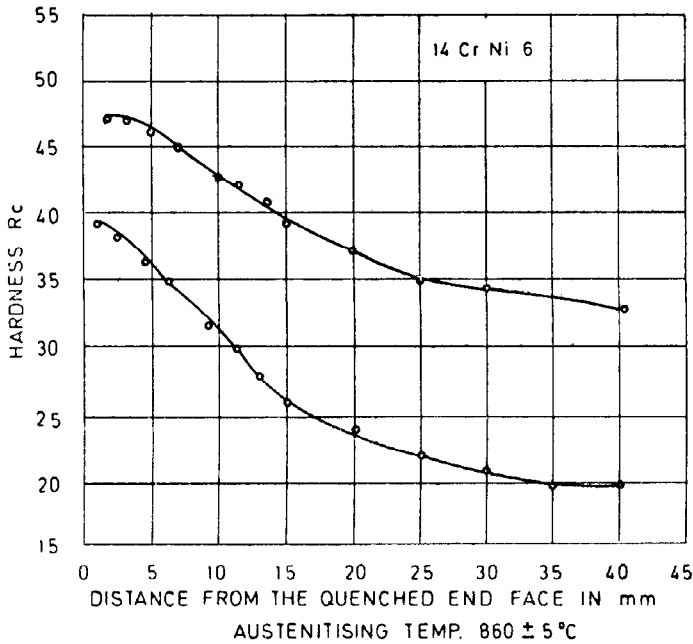
*Method for Brinell hardness test for metallic materials (*second revision*).

†Method for Izod test of metals (*first revision*).

‡Method for tensile testing of steel products (*first revision*).

6. HARDENABILITY

6.1 The end quench hardenability curve is given in Fig. 1.



Distance mm	1	2	3	4	5	6	7	8	9	10	15	20	25	30	35	40
Min (Rc)	39	39	38	37	36	35	34	33	32	31	26	24	22	21	20	20
Max (Rc)	47	47	47	46	46	45	45	44	43	42	39	37	35	34	34	33

FIG. 1 END-QUENCH HARDENABILITY TEST-DATA FOR
14CrNi6 GRADE STEEL

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Panel to Collect Data on Steel for Automobile Purposes, SMDC 31/P12

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